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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/816,643	03/23/2001	Seiyo Nakashima		6862

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EXAMINER

KACKAR, RAM N

ART UNIT PAPER NUMBER

1763

DATE MAILED: 12/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/816,643

Applicant(s)

NAKASHIMA ET AL.

Examiner

Ram N Kackar

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-9 and 13-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-9 and 13-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1 The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2 Claims 1-2, 4-8, 13-19 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by MacLeish et al (US5653808). MacLeish et al disclose a processing chamber (Fig 2), a susceptor (Fig 2-50), a heating unit disposed below the susceptor (Fig 2-44), the susceptor capable of lifting, lowering and being rotatable with respect to heating unit (Col 4 line 65 to Col 5 line 5).

Regarding claim 1, 8 and 15 the susceptor and the heating unit are capable of being lifted and lowered together so that the distance between the two may be kept constant (Col 5 line 34-37).

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Regarding claim 4, 5, 16 and 17 the apparatus for lifting and lowering the substrate is partly disposed inside the susceptor (Fig 1-54) and partly outside (Fig 1-48).

Regarding claim 6 the susceptor has a central member (Fig 2) and an attached peripheral member (Fig 2- 50a) and the lifting apparatus is attached to the central member (Fig 2-48).

Regarding claim 7 and 19 the heating member is in three independently controllable parts so that at least one may correspond to the central part and one may correspond to the peripheral part (Col 4 56-60).

Regarding claim 8, in addition to the disclosure in paragraph 1, MacLeish et al also disclose a structure of susceptor so that when a substrate sits on it, its upper surface will be substantially flush with the peripheral part (Fig 3b).

Regarding claim 13, lift and lowering apparatus as being comprised of susceptor and housing it does get restricted in lowering at some point near the bottom of the chamber.

Regarding claim 22 the parts disclosed are in the same order as claimed. Nevertheless re arrangement of parts has been held obvious.

3 Claims 8, 9 and 23 are rejected under 35 U.S.C. 102(e) as being anticipated by Okayama et al (US 6334983).

Okayama et al disclose a processing chamber (Fig 1), a susceptor (118), a heating unit disposed below the susceptor (Col 6 lines 46-51), the susceptor and the heating unit capable of being lifted and lowered together so that the distance between the two would be constant (Col 6 lines 46-51), a quartz ring disposed on the susceptor at periphery and substantially flush with the upper surface of the susceptor (Fig 1-126 and Col 7 line 45-50).

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4 Claims 20, 21 and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Nomura, Hishashi (JP 05291154). Nomura Hishashi discloses a processing chamber (Fig 3), a susceptor (2), a heating unit disposed below the susceptor (3), the susceptor capable of lifting, lowering and being rotatable with respect to heating unit (Abstract), a shower head for gas (14) the lifting and lowering apparatus engaging in both heating and susceptor unit (Fig 3).

Claim Rejections - 35 USC § 103

5 The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6 Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over MacLeish et al (US5653808).

Further to discussion of claim 18 MacLeish et al disclose all the limitations of this claim except the thermocouples for sensing temperature.

However, MacLeish et al disclose IR sensors. It would have been obvious to use thermocouple sensor in view of the teaching that instead of IR sensor any other type could also be used (Col 6 lines 7-9).

Response to Amendment

7 Applicant's arguments filed 10/10/2003 have been fully considered but they are not persuasive.

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Applicant argues that MacLeish discloses at Col 5 lines 36-39 that when second motor is activated susceptor 50 moves away from housing 42.

MacLeish disclosure at Col 5 lines 36-39 is in reference to a certain process of using the apparatus and does not suggest that if needed, the distance of housing and susceptor could not be kept constant. In fact the second motor provides the flexibility that the distance may be kept constant or variable according to process need.

With respect to claim 13 applicant argues that pin 54 which lifts and lowers the substrate abuts the upper surface of layer 46, which is between the susceptor 50 and coil 44 and not down side of an upper face of said heating unit.

Examiners position in this regards is that the lower part of pin 54 is the lifting and lowering apparatus since this end acts with the housing to lift or lower the substrate and this part in its lowest position gets below surface 46 (Col 8 lines 59-63).

Regarding claim 22 as explained above, gas is introduced at the top of substrates, which at that time is in processing position. From the top of the substrate the exhaust gases travel downwards to exhaust while the substrate transfer position is much lower to process position. Therefore the disclosure reads on the claim.

Regarding claims 20 and 21 applicant argues that the abstract does not disclose or suggest that the substrate is processed in a state in which the susceptor is rotated relative to the heating unit and further argues that the rotary and lifting mechanism does not engage in the heater.

Abstract clearly states that the wafer mounting part has rotary and lifting mechanism and Fig 1 clearly shows rotary shaft 13 passing through the heating devices 3 which indicates rotary mechanism engaging with the heater.

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Claims 9 and 23 are fully disclosed by Okayama et al (US 6334983) as indicated above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N Kackar whose telephone number is 571 272 1436. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on 571 272 1439. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 0661.

RK


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